



# Best Available Copy

Docket No.: M4065.0536/P536-B  
(PATENT)

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:  
Hongmei Wang et al.

Application No.: 10/751,443

Confirmation No.: 2565

Filed: January 6, 2004

Art Unit: 2814

For: FULLY-DEPLETED (FD) (SOI) MOSFET  
ACCESS TRANSISTOR (AS AMENDED)

Examiner: C. M. D. Pizarro

### DECLARATION OF HONGMEI WANG UNDER 37 CFR 1.131

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

I, Hongmei Wang, declare and state as follows:

1. I reside at 6225 Summer Pond Drive, Centerville, Virginia 20121.
2. I am a process integration engineer in the Research and Development (R&D) section of Micron Technology Inc. ("Micron"). I work in the integration and development of transistors and, more specifically, in the design, proper implantation and setup profiles of such transistors.
3. I am one of the two joint inventors of the above-identified U.S. patent application (the "'443 application"), filed on January 6, 2005, which is a continuation of,

and claims priority from, U.S. Patent Application Serial No. 10/161,615 (the "'615 application") filed on June 5, 2002, as evidenced by the attached executed Declaration document filed with the United States Patent and Trademark Office on June 5, 2002 (Exhibit A). The co-inventor is John Zahurak.

4. I have reviewed and I understand the '615 application, including the currently pending claims and amendments of the '443 application (the "Claimed Invention").

5. Co-inventor John Zahurak and I conceived the invention covered by the Claimed Invention prior to February 21, 2002, as evidenced by Exhibit B, which is a copy of Micron Invention Disclosure document #01-0489. This document contains a write up of the conception of our invention. The actual dates on this document and any description not relevant to the conception of the Claimed Invention have been blanked out; however, the conception, signature and witness dates are all prior to February 21, 2002. Micron is the assignee of the present application.

6. After the approval for filing of the Invention Disclosure (Exhibit B) by the Micron Patent Committee, the law firm of Dickstein Shapiro Morin & Oshinsky LLP ("DSMO") was assigned to write this application, as evidenced by attached Exhibit C, which is a copy of an order letter from Micron to DSMO. Although the date of this letter is blanked out, the letter was written and dated prior to February 21, 2002. DSMO began preparation of a draft of the '615 application covering the Claimed Invention, and I had discussions with the DSMO attorneys subsequent to the date of this letter, which led to the first draft of the application. Attached as Exhibit D is a copy of a letter dated March 8, 2002 written by a DSMO attorney forwarding a first draft of the '615 present application covering the Claimed Invention to Micron, for review by co-inventor John Zahurak and myself.

7. The first draft of the '615 application covering the Claimed Invention was received by co-inventor John Zahurak and myself from the Micron Patent Department around mid March 2002.

8. From about mid March 2002 to April 12, 2002, in addition to my ordinary tasks in the R&D section at Micron, I was also responsible for transistor integration for 78nm Micron DRAMs in the R&D section. During this period of time, and to the best of my knowledge, my co-inventor John Zahurak was also extremely busy working on the same DRAM project. Attached as Exhibit E is a copy of a note from a DSMO attorney dated April 1, 2002 recording a telephone conversation between myself and the DSMO attorney and attesting to the fact that John Zahurak and myself were both busy working on the DRAM project. However, we were able to review and provide comments and suggestions to the first draft of the '615 application. I provided comments directly to a DSMO attorney in an email dated April 8, 2002 (redacted copy attached as Exhibit F). In addition, I provided my comments to the Micron Patent Department, which was also reviewing the first draft of the '615 application. These comments of the first draft of the '615 application were forwarded by Micron Patent Department to DSMO in a letter from Micron to DSMO dated April 12, 2002 (copy attached as Exhibit G).

9. Attached as Exhibit H is a copy of a letter written by a DSMO attorney forwarding what was thought to be a final draft of the '615 application covering the Claimed Invention to Micron. The date of this letter is April 22, 2002. After our review of this draft of the '697 application, co-inventor John Zahurak and myself provided additional application changes, which were then forwarded again to the Micron Patent Department and from there to DSMO. Our comments of the final draft of the '615 application were forwarded by Micron Patent Department to DSMO in a letter from Micron to DSMO dated May 10, 2002 (copy attached Exhibit I).

10. Subsequently, I also provided a few additional application changes directly to a DSMO attorney. Attached is a copy of an email correspondence dated May 15, 2002 (Exhibit J) from me to the DSMO attorney. This led to another, now final draft of the '615 application, which was forwarded to Micron in a letter written by a DSMO attorney dated May 16, 2002 (copy attached as Exhibit K).

11. Co-inventor John Zahurak and myself reviewed and executed the May 16, 2002 final draft of the '615 application on May 23, 2002, as evidenced by the Declaration (Exhibit A). The final draft was forwarded to the Micron's Patent Department for execution of a power of attorney by a Micron corporate representative, and from there to DSMO. The executed declaration, assignment and power of attorney documents were forwarded to a DSMO attorney by the Micron's Patent Department in a letter dated June 3, 2002 (copy attached as Exhibit L). The '615 application was filed with the United States Patent and Trademark Office on June 5, 2002. The preparation and filing of the present application covering the Claimed Invention was diligently pursued from prior to February 21, 2002 to the date of filing, June 5, 2002.

12. All statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true; and these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the above-identified patent.

Date: 12/08/2005

By: Hongmei Wang  
Hongmei Wang

# **EXHIBIT A**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am an original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

FULLY-DEPLETED (FD) SOI MOSFET ACCESS TRANSISTOR AND METHOD OF FABRICATION

the specification of which is attached hereto.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by an amendment, if any, specifically referred to in this oath or declaration.

I acknowledge the duty to disclose all information known to me which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code § 119/365 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)			Priority Not Claimed
_____ (Number)	_____ (Country)	_____ (Filing Date)	<input type="checkbox"/>
_____ (Number)	_____ (Country)	_____ (Filing Date)	<input type="checkbox"/>
_____ (Number)	_____ (Country)	_____ (Filing Date)	<input type="checkbox"/>

I hereby claim the benefit under Title 35, United States Code, § 120/365 of any United States and PCT international application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior

United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56(a) which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(Application No.)	(Filing Date)	(Status) (patented, pending, abandoned)
(Application No.)	(Filing Date)	(Status) (patented, pending, abandoned)
(Application No.)	(Filing Date)	(Status) (patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Please address all correspondence to Thomas J. D'Amico of Dickstein Shapiro Morin & Oshinsky LLP located at 2101 L Street NW, Washington, DC 20037-1526. Telephone calls should be made to (202) 785-9700.

Full name of first inventor: Hongmei Wang

Inventor's signature: Hongmei Wang Date: 05/23/02

Residence: Boise, Idaho

Citizenship:

Mailing Address: 1656 S. Loggers Pond Pl.  
Apt. 34  
Boise, Idaho 83706

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

DECLARATION FOR PATENT APPLICATION

Signature Page for Second Inventor

Full name of second inventor: John K. Zahurak

Inventor's signature: John K. Zahurak Date: 5/23/02

Residence: Boise, Idaho

Citizenship: US

Mailing Address: ~~3757 Gekeler Lane #195~~ 4337 S. Pinecrest Way  
~~Boise, Idaho 83706~~ Boise ID 83716



## **EXHIBIT B**

# INVENTION DISCLOSURE

DI-0489

1. INVENTOR(S):

Hongmei Wang  
John K Zahurak



2. DESCRIPTION:

• Title:

P+ Gate FD SOI MOSFET Technology for access transistor in DRAM memory cel

• Brief Description:

Fully-depleted(FD) SOI N-channel Access Transistor has been realized with P+ gate technology for high performance, low power DRAM and SRAM application

3. CONCEPTION & DOCUMENTATION OF INVENTION:

• Date when first conceived:

04/29/2001

• To whom was the idea first described:

• On what date:

• Date of the first tangible record:

04/30/2001

• Type and location:

Hongmei's e-mail sent to John Zahurak.

4. INFORMATION RELATED TO INVENTION:

• Related invention disclosures:

• Closest technology:

SOI  
P+ gate N-channel MOSFETs  
Access transistor

• Advantages of this invention over previous technology:

Fabricate FD SOI and PD SOI MOSFETs at the same silicon film



thickness  
Simplified manufacturing  
Reduced access transistor leakage current.  
Improved threshold voltage and SubVt  
Flexible process design

5. IMPORTANT DATES:

- If the invention has been disclosed outside the company, please specify to whom it has been disclosed, when, and in what form:

No.

- If any articles describing your invention have been published, please specify the author(s), title of article, publication and date:

No.

- If any engineering samples have been given out, please specify to whom and on what date they were given:

No.

- If any product using the invention has been sold or offered for sale, please specify to whom and on what date:

No.

6. DISPOSITION OF THE INVENTION:

- When will (or did) Micron begin use of the invention experimentally:

Unknow.

- When will (or did) Micron begin production of this invention:

Unknow.

7. MISCELLANEOUS INFORMATION:

- ARPA project:
- Was the invention developed during a joint development agreement or other contract with an outside company:

No.

- List developmental work outside of the company, including Government proposal or contract:

8. INVENTORS:

• \_\_\_\_\_  
Name : Hongmei Wang

Home Address : 1656 S. Loggers Pond Pl., Apt. 34  
City : Boise State : ID Zipcode : 83706  
Citizenship :  
Company : Micron Technology, Inc.  
Work Phone # : 368-2018 Mail Stop : 306  
Dept Name : R&D-Process Development Dept # : 850  
Supervisor : John Zahurak

Signature : Hongmei Wang

Date : [REDACTED]

Name : John K Zahurak  
Home Address : 3757 Gekeler Lane #195  
City : Boise State : ID Zipcode : 83706  
Citizenship : U.S.A.  
Company : Micron Technology, Inc.  
Work Phone # : 368-5174 Mail Stop : 306  
Dept Name : R&D Process Development Dept # : 850G  
Supervisor : Chuck Dennison

Signature : John K. Zahurak

Date : [REDACTED]

9. WITNESS:

If there is only one (1) inventor, a witness should sign and date this disclosure. A witness in this case is a non-inventor who understands the nature of the invention.

( Signature of Witness )

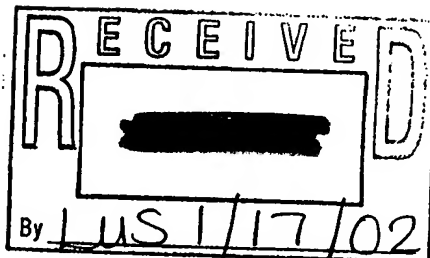
( Date )

# EXHIBIT C



Micron Technology  
8000 S. Federal W.  
P.O. Box 6  
Boise, ID 83707-0  
208.368.4000

Tom D'Amico  
Dickstein, Sharpiro, Morin,  
& Oshinsky  
2101 L. Street N.W.  
Washington, DC 20037



Re: New Disclosures

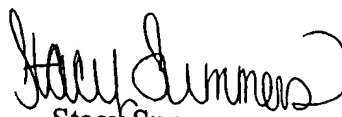
Dear Tom:

The following disclosures have been assigned to your docket:

Docket #	Priority	Notes
01-1204	High	
01-0489	Regular	Cite application for docket 99-0833 (.0329)

Please prepare and file a patent application with the U.S. Patent and Trademark Office on behalf of Micron Technology, Inc. for each. Where possible, please draft system, product and process claims for each. If you have any questions regarding these disclosures or any other disclosures, please feel free to call.

Sincerely,

  
Stacy Summers  
Patent Assistant

Phone: 208/368-4591  
Fax: 208/368-5606

*The future of memory*

---

## **EXHIBIT D**

DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP

2101 L Street NW • Washington, DC 20037-1526

Tel (202) 785-9700 • Fax (202) 887-0689  
Writer's Direct Dial: (202) 828-2232

Writer's EMail: DAmicoT@DSMO.com

March 8, 2002

Ms. Stacy L. Summers  
Micron Technology, Inc.  
8000 S. Federal Way  
Boise, Idaho 83707-0006

**PRIVILEGED AND CONFIDENTIAL:  
ATTORNEY-CLIENT COMMUNICATION**

Re: U.S. Patent Application  
Application No.: Not Yet Assigned  
Title: FD SOI MOSFET DEVICE AND METHOD OF FABRICATION  
Inventor: Hongmei Wang, et al.  
Your Reference: 01-0489  
Our Reference: M4065.0536/P536

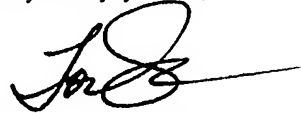
Dear Stacy:

Enclosed please find four copies of a first draft for Micron's patent application entitled "FD SOI MOSFET DEVICE AND METHOD OF FABRICATION." This draft has been prepared based upon the original invention submission. Please have Messrs. Wang and Zahurak review this draft to ensure that it completely and accurately describes the invention.

Please direct any comments on the draft to me or Gabriela Coman at (202) 775-4706. I trust that Micron legal and the inventors can provide any comments within the next ten (10) days, so we can revise the application and get it filed as soon as possible.

If you have any questions, please do not hesitate to call.

Very truly yours,



Thomas J. D'Amico

TJD/GC/meb  
Enclosures (4)



GABRIELA COMAN

4/1/02

114615.0536



Called Hongwei to ask about revisions. Hongwei said John is busier than usual b/c he works on a new project in SRAM.

They will try to finish the draft by late next week.

Hongwei is also extremely busy w/ the same SRAM project and it's difficult to coordinate working together w/ John on revisions.

**Coman, Gabriela**

---

**From:** hwang [hwang@micron.com]  
**Sent:** Monday, April 08, 2002 1:51 PM  
**To:** ComanG@dsmo.com  
**Cc:** jzahurak  
**Subject:** Patent application 01-0489

Jabriela,

We went through the first draft of pattern application 01-0489. The draft looks good.

We need to do some modification on the data range, for example implant dose, energy et al. We already marked the modification on the draft, will send to you soon.

We marked a star at every modified line. You should be easy to find that.

Besides the modification on the draft, we have another suggestion:

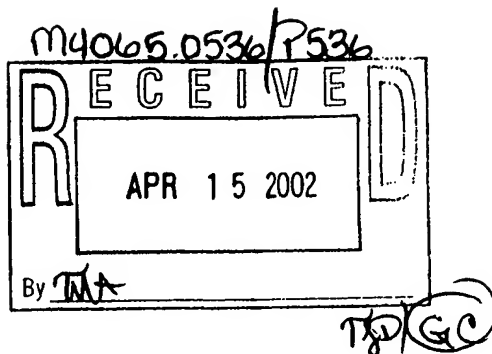
[REDACTED]

That's it.

Please let us know if you have any question.

Thanks,

Hongmei



Micron Technology, Inc.  
8000 S. Federal Way  
P.O. Box 6  
Boise, ID 83707-0006  
208.368.4000

April 12, 2002

Tom D'Amico  
Dickstein, Shapiro, Morin  
& Oshinsky  
2101 L Street N.W.  
Washington, D.C. 20037

Re: Micron Docket # 01-0489  
Your Ref. # M4065.0536

Dear Tom:

In accordance with the inventor's request, please find the transformations for the above referenced draft. Please revise as stated and provide me with an amended draft.

Feel free to let me know if you have any questions.

Very truly yours,

Stacy L. Summers  
Patent Assistant

Phone: 208/368-4591  
Fax: 208/368-5606

*The future of memory*

DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP

2101 L Street NW • Washington, DC 20037-1526

Tel (202) 785-9700 • Fax (202) 887-0689

Writer's Direct Dial: (202) 828-2232

Writer's EMail: DAmicoT@DSMO.com

April 22, 2002

Ms. Stacy L. Summers  
Micron Technology, Inc.  
8000 S. Federal Way  
Boise, Idaho 83707-0006

**PRIVILEGED AND CONFIDENTIAL:  
ATTORNEY-CLIENT COMMUNICATION**

Re: U.S. Patent Application  
Application No.: Not Yet Assigned  
Title: FULLY-DEPLETED (FD) SOI NMOSFET DEVICE AND METHOD  
OF FABRICATION  
Inventor: Hongmei Wang, et al.  
Your Reference: 01-0489  
Our Reference: M4065.0536/P536

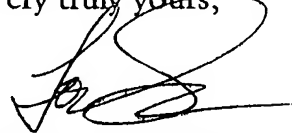
Dear Stacy:

Enclosed please find four copies of a final draft for Micron's patent application entitled "Fully-Depleted (FD) SOI NMOSFET Device and Method of Fabrication." This draft incorporates all of the inventor's requested revisions.

Also enclosed are signature papers including a Declaration, Assignment and Power of Attorney. We will file the application as soon as we receive the signed documents.

Please direct any comments or questions on the draft to me or Gabriela Coman at (202) 775-4706.

Very truly yours,



Thomas J. D'Amico

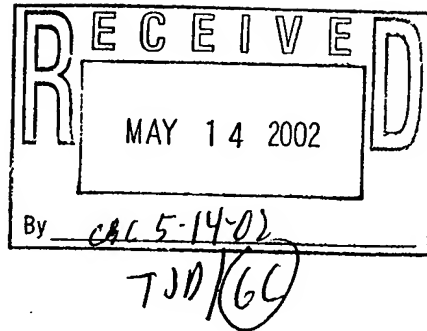
TJD/GC/meb  
Enclosures



Micron Technology, Inc.  
8000 S. Federal Way  
P.O. Box 6  
Boise, ID 83707-0006  
208.368.4000

May 10, 2002

Tom D'Amico  
Dickstein, Shapiro, Morin  
& Oshinsky  
2101 L Street N.W.  
Washington, D.C. 20037



Re: Micron Docket # 01-0489  
Your Ref. # M4065.0536

Dear Tom:

In accordance with the inventor's request, please find the transformations for the above referenced draft. Please revise as stated and provide me with an amended draft.

Feel free to let me know if you have any questions.

Very truly yours,

Stacy L. Summers  
Patent Assistant

Phone: 208/368-4591  
Fax: 208/368-5606

*The future of memory*

## Coman, Gabriela

---

**From:** hwang [hwang@micron.com]  
**Sent:** Wednesday, May 15, 2002 12:27 PM  
**To:** Coman, Gabriela  
**Subject:** RE: title

Fully-depleted(FD) Silicon-on-Insulator(SOI) MOSFET Access Transistors  
and method of fabrication.

Hongmei

> -----Original Message-----

> From: Coman, Gabriela [mailto:ComanG@dsmo.com]  
> Sent: Wednesday, May 15, 2002 10:23 AM  
> To: 'hwang@micron.com'  
> Subject: title

>  
>  
>  
> Fully-depleted (FD) Silicon-on-Insulator (SOI) MOSFET Access  
> Transistor and  
> Method of formation ?

>  
>  
> Gabriela Coman, Esq.  
> 2101 L Street NW  
> Washington, DC 20037  
> (202) 775-4706  
> fax (202) 887-0689

>  
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> to postmaster@dsmo.com

>  
> Dickstein Shapiro Morin & Oshinsky LLP  
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DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP

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May 16, 2002

Ms. Stacy L. Summers  
Micron Technology, Inc.  
8000 S. Federal Way  
Boise, Idaho 83707-0006

**PRIVILEGED AND CONFIDENTIAL:  
ATTORNEY-CLIENT COMMUNICATION**

Re: U.S. Patent Application  
Application No.: Not Yet Assigned  
Title: FULLY-DEPLETED (FD) SOI MOSFET ACCESS TRANSISTOR  
AND METHOD OF FABRICATION  
Inventor: Hongmei Wang, et al.  
Your Reference: 01-0489  
Our Reference: M4065.0536/P536

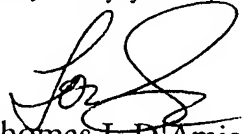
Dear Stacy:

Enclosed please find four copies of another final draft for Micron's patent application entitled "Fully-Depleted (FD) SOI Mosfet Access Transistor and Method of Fabrication." This draft incorporates all of the inventors' requested revisions.

Also enclosed are signature papers including a Declaration, Assignment and Power of Attorney. We will file the application as soon as we receive the signed documents.

Please direct any comments or questions on the draft to me or Gabriela Coman at (202) 775-4706.

Very truly yours,



Thomas J. D'Amico

TJD/GC/meb  
Enclosures

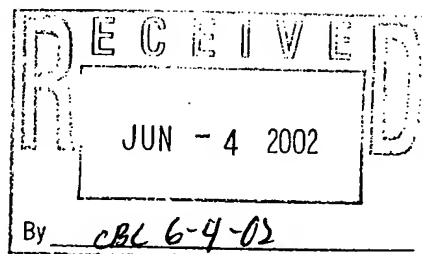


June 3, 2002

Micron Technology, Inc.  
8000 S. Federal Way  
P.O. Box 6  
Boise, ID 83707-0006  
208.368.4000

Tom D'Amico  
Dickstein, Shapiro, Morin  
& Oshinsky  
2101 L Street N.W.  
Washington, D.C. 20037

Re: Micron Docket # 01-0489  
Your Ref. # M4065.0536



TJD/6C

Dear Tom:

Please find enclosed the following signature papers, which have been signed by the inventors and are ready to be filed with the Patent Office:

- 1) Declaration;
- 2) Assignment; and
- 3) Power of Attorney.

Please fax me a copy of the transmittal letter when this case is filed with the PTO. Feel free to let me know if you have any questions.

Very truly yours,

Stacy L. Summers  
Patent Assistant

Phone: 208/368-4591  
Fax: 208/368-5606

*The future of memory*



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